THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888

No. 2. JANUARY 10, 1953 VOL. 65.

THE INFLUENCE OF NUTRITION ON REPRODUCTIVE EFFICIENCY IN CATTLE

III. The Influence of the Vitamin D Status on the Effect of Calcium and Phosphorus Intake on the Fertility of Cows and Heifers*

BY

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In the first of this series of papers, Hignett & Hignett (1951) described a survey in herds which were kept under observation during the six months from October 1st, 1949, to March 31st, 1950. Details of method and record were set out in it and need not be repeated here. From an analysis of the relationship between intakes of phosphorus and calcium and the fertility of the cows and heifers, it was concluded that when the P_2O_5 intake was low a rise in the CaO intake impaired fertility, but that when the P_2O_5 intake was high a low CaO intake was often associated with low fertility, an increase in CaO intake then improving breeding efficiency. It also appeared that for high fertility in dairy cattle the P_2O_5 intake should be considerably higher than had been accepted previously.

It will be noted that the survey was conducted during the winter period—a period chosen quite deliberately to enable good determination of the quantity and quality of food consumed to be made, something impossible during the grazing season. It was appreciated that the vitamin D status might be a factor affecting the influence of P_2O_5 and CaO intakes on the fertility of these cows and heifers and the purpose of this paper is to present and discuss the analysis of the data from that point of view. The original analysis of the data related to 802 animals but since 15 of them, although continuously housed until after service, were served after March 31st, they have not been included in this analysis which relates only to the remaining 787 animals in 39 herds.

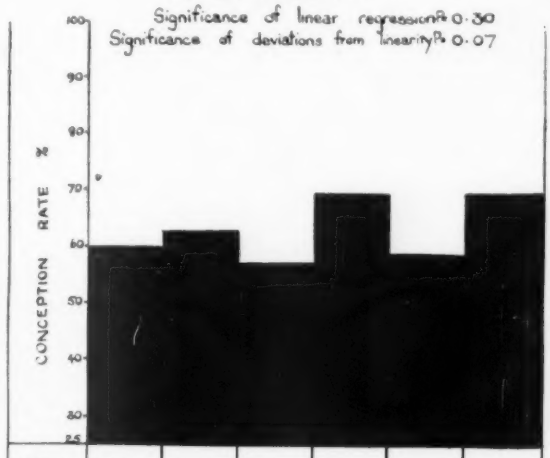
The summer of 1949 was long and brilliantly sunny. It may properly be assumed that these cows and heifers came under observation with good reserves of vitamin D. As winter progressed these reserves would fall and it is possible that by the end of the period of observation some level of avitaminosis D existed. To determine if a fall in fertility rate did occur during the period, Diagram A has been constructed to illustrate the month by month conception rate of the group as a whole.

Probit analysis has been carried out on the data presented in each diagram. In the case of Diagram A the month in which first service occurred has been taken as the dosage for the purpose of that analysis. It will be noted that the conception rate showed no significant alteration throughout the period.

It is possible, of course, that the vitamin D status of the animal can exert an influence on fertility only when the intakes of calcium and phosphorus are not at or about the optimum levels. The question has therefore been examined from this angle, but to avoid an excessively large number of diagrams, it has been necessary to take two-monthly periods, rather than periods of one month. The data are set out on this basis in the diagrams which follow in which the cows and heifers are grouped according to their P_2O_5 intakes. These intakes are defined in relation to the accepted standard of 23 grammes for maintenance and 19 grammes per gallon of milk and expressed as excess over that amount.

DIAGRAM A

Relationship between conception rate and month during which first service occurred



MONTH	October	November	December	January	February	March
No. of animals	76	115	167	167	145	117
% holding to first service	61	64	58	71	59	70

Total number of cows and heifers 787

Average conception rate (based on first service) 63·8%

Diagrams B1, B2 and B3 show the relationship between excess P_2O_5 intake and conception rate in each of the three two-month periods.

It will be seen that in the months of October and November, 1949 (Diagram B1), the relationship between P_2O_5 intake and fertility was not statistically significant, whereas in the months of December, 1949, and January, 1950 (Diagram B2), and February/March, 1950 (Diagram B3), a rise in phosphorus intake led to a significant rise in conception rate.

In Diagrams C1, C2 and C3 conception rate is correlated with the CaO : P_2O_5 ratio of the diet for those cattle receiving less than 20 grammes excess P_2O_5 per day.* During October and November fertility was apparently uninfluenced by a widening ratio, whereas in the succeeding four months there was a tendency for conception rate to drop as the ratio

* Received for publication November 5th, 1952. Numbers 1 and 2 in this series were published in our issues of September 22nd, 1951, and April 5th, 1952, respectively.

* As in the first paper of this series, 20 grammes excess P_2O_5 has been chosen because in that paper it was shown that conception rate was not satisfactory until the P_2O_5 intake reached that level.

widened. A significant regression could be demonstrated during February and March.

In Diagrams D1, D2 and D3 is shown the effect of the CaO : P_2O_5 ratio of the diet upon fertility in those cows and heifers receiving more than 20 grammes excess P_2O_5.* It will be seen that, in each two-month period, fertility tended to rise as the calcium intake was increased, but the relationship reached statistical significance only during February and March.

Discussion

It was, of course, physically impossible to undertake vitamin D estimations which would indicate the vitamin intake and status of the 787 cows and heifers, the subject of these observations. In these circumstances, it is necessary to depend upon generally accepted hypotheses. It is reasonable to assume that these animals entered the observation with a satisfactory vitamin D reserve. Despite some intake of vitamin D, presumably their reserves of the vitamin would tend to undergo progressive depletion throughout the period of the observation. The conditions under which these cattle were kept were generally representative for this country. If the vitamin D intake and status is, by itself, of paramount importance in determining the fertility of our cattle, one would expect a fall in conception rate throughout the winter period in the sample which comprised this survey. Such a fall did not occur, as is demonstrated in Diagram A.

It must be pointed out, however, that the spring and summer of 1949 were particularly dry and bright ; at Kew the sunshine recorded exceeded by 330 hrs. that of the average year. Very probably these animals entered the observation with a higher vitamin D reserve and had a greater intake from well-harvested hay and straw than do cattle in the average year. It is, then, only safe to conclude that, on the basis of this observation, vitamin D deficiency was not an important factor contributing to infertility in female cattle in the southern half of England during the winter of 1949-50.

If vitamin D is a material factor it may, of course, show its influence only when the intake of phosphorus and/or calcium is low or out of balance. The Diagrams B, C and D do provide some evidence that, even in this exceptional year, the fall in vitamin D status, which may be assumed during the winter period, had an influence. They provide reason for suggesting that, as the vitamin D reserves become depleted, the effect of sub-optimal intakes of phosphorus and calcium becomes more manifest. If this be the true position, it is largely a matter of economic convenience whether an imbalance leading to lowered fertility is corrected by the administration of vitamin D or by the feeding of phosphorus and/or calcium supplements. From the practical point of view the aims of those producing home-grown feeding-stuffs will largely determine the choice (Hignett, 1952). We are not yet in a position to define the limits of deviation from optimum mineral intakes within which the administration of vitamin D alone will correct adverse effects on fertility.

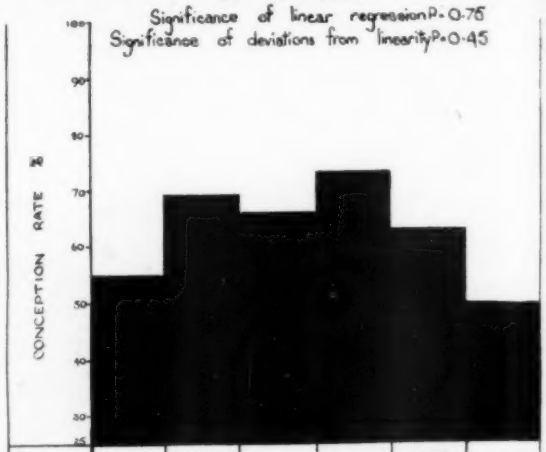
The complexity of this subject is well illustrated, however, by the authors' observation that certain cattle regularly exposed to tropical sunlight (latitude 17° N.), and having an intake of phosphorus compatible with accepted standards, had low blood inorganic phosphorus levels, presumably due to an excessive intake of both calcium and magnesium. The adverse effect on fertility was obvious.

It is very evident that the influence of mineral metabolism on the reproductive efficiency of cows and heifers is delicately balanced and that, therefore, great care is necessary in assessing it in any investigation of herd fertility.

DIAGRAM B_1

Relationship between P_2O_5 intake at time of first service and conception rate, of those cows and heifers served during Oct and Nov. 1949

Significance of linear regression $P = 0.75$
Significance of deviations from linearity $P = 0.45$



EXCESS P_2O_5 %*	<0 gms.	0-20 gms.	20-40 gms.	40-60 gms.	60-80 gms.	>80 gms.
No. of animals	42	39	42	15	27	26
% holding to first service	55	69	67	73	63	50

Total number of cows and heifers 191

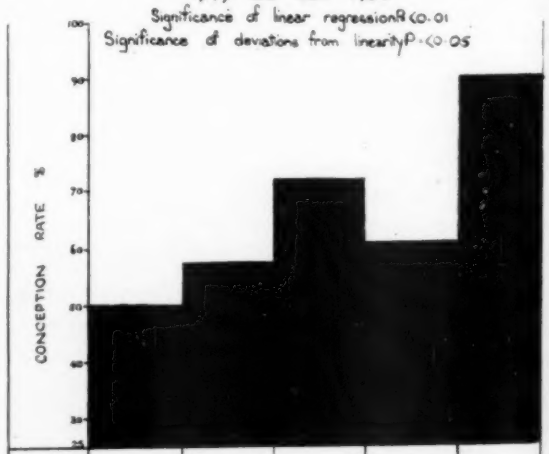
Average conception rate (based on first service) 62.2%

* Amount above :— 23 gms. for maintenance. 10 gms. per gallon of milk.

DIAGRAM B_2

Relationship between P_2O_5 intake at time of first service and conception rate of those cows and heifers served during Dec 1949 and Jan. 1950

Significance of linear regression $P < 0.01$
Significance of deviations from linearity $P < 0.05$



EXCESS P_2O_5 *	<0 gms.	0-20 gms.	20-40 gms.	40-60 gms.	>60 gms.
No. of animals	30	115	90	70	29
% holding to first service	50	57	72	61	90

Total number of cows and heifers 334

Average conception rate (based on first service) 64.4%

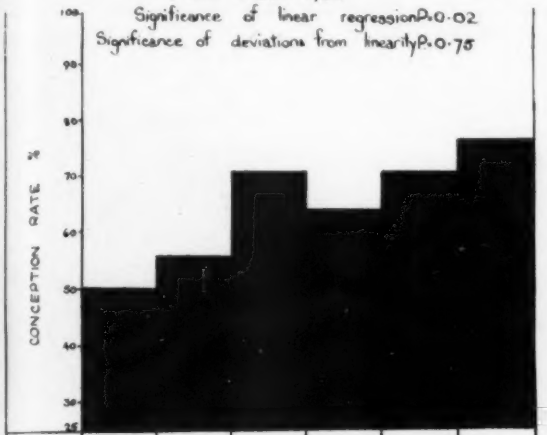
* Amount above :— 23 gms. for maintenance. 10 gms. per gallon of milk.

DIAGRAM B_3

Relationship between P_2O_5 intake at time of first service and conception rate of those cows and heifers served during Feb: and March 1950

Significance of linear regression $P = 0.02$

Significance of deviations from linearity $P = 0.75$



EXCESS P_2O_5 *	<0 gms.	0-20 gms.	20-40 gms.	40-60 gms.	60-80 gms.	>80 gms.
No: of animals	20	75	64	50	20	33
% holding to first service	50	56	70	64	70	76

Total number of cows and heifers 262

Average conception rate (based on first service) 64·1%

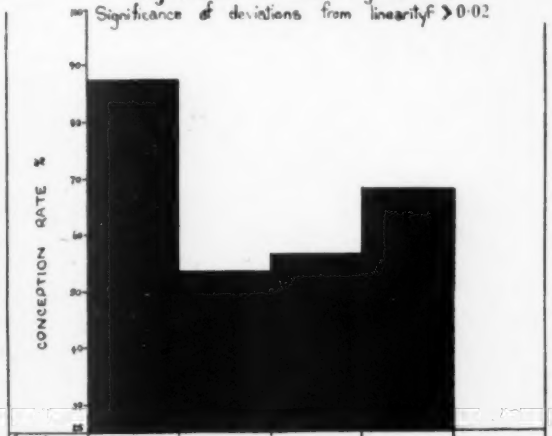
* Amount above:— 23 gms. for maintenance. 19 gms. per gallon of milk.

DIAGRAM C_2

Relationship between $CaO:P_2O_5$ ratio and conception rate for animals receiving less than 20 gms. excess* P_2O_5 and served during Dec: 1949 and Jan: 1950

Significance of linear regression $P > 0.3$

Significance of deviations from linearity $P > 0.02$



$CaO:P_2O_5$ ratio (P_2O_5 expressed as 1)	0·6 - 0·99	1·0 - 1·39	1·4 - 1·79	1·8 - 2·19	>2·2
No: of animals	8	65	41	19	12
% holding to first service	88	54	36	68	25

Total number of cows and heifers 145

Average conception rate (based on first service) 55·9%

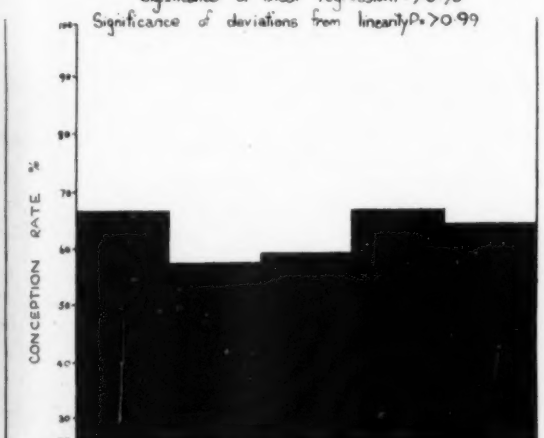
* Amount above:— 23 gms. for maintenance. 19 gms. per gallon of milk.

DIAGRAM C_1

Relationship between $CaO:P_2O_5$ ratio and conception rate for animals receiving less than 20 gms excess* P_2O_5 and served during Oct: and Nov: 1949

Significance of linear regression $P > 0.90$

Significance of deviations from linearity $P > 0.99$



$CaO:P_2O_5$ ratio (P_2O_5 expressed as 1)	0·6-0·99	1·0-1·39	1·4 - 1·79	1·8 - 2·19	>2·2
No: of animals	15	14	29	9	14
% holding to first service	67	57	59	67	64

Total number of cows and heifers 81

Average conception rate (based on first service) 61·7%

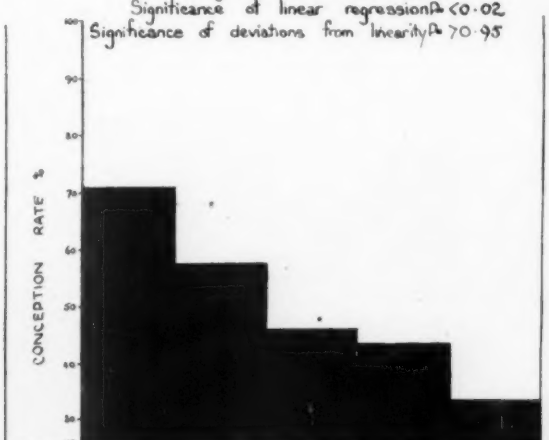
* Amount above:— 23 gms. for maintenance. 19 gms. per gallon of milk.

DIAGRAM C_3

Relationship between $CaO:P_2O_5$ ratio and conception rate for animals receiving less than 20 gms excess* P_2O_5 and served during Feb: and March 1950

Significance of linear regression $P < 0.02$

Significance of deviations from linearity $P > 0.95$



$CaO:P_2O_5$ ratio (P_2O_5 expressed as 1)	0·6 - 0·99	1·0 - 1·39	1·4 - 1·79	1·8 - 2·19	>2·2
No: of animals	28	28	13	14	12
% holding to first service	71	57	46	43	33

Total number of cows and heifers 95

Average conception rate (based on first service) 54·8%

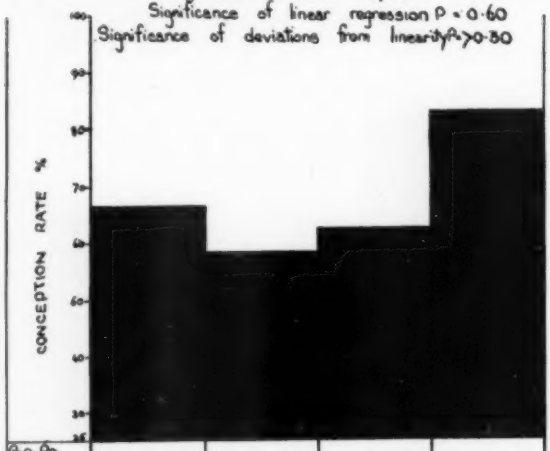
* Amount above:— 23 gms. for maintenance. 19 gms. per gallon of milk.

DIAGRAM D_1

Relationship between $CaO:P_2O_5$ ratio and conception rate for animals receiving 20 gms. or more excess P_2O_5 and served during Oct: and Nov: 1950

Significance of linear regression $P < 0.60$

Significance of deviations from linearity $P > 0.30$



$CaO:P_2O_5$ ratio (P_2O_5 expressed as 1)	0.6 - 0.99	1.0 - 1.39	1.4 - 1.79	1.8 - 2.19
No: of animals	12	43	49	6
% holding to first service	67	58	63	83

Total number of cows and heifers 110

Average conception rate (based on first service) 62.7%

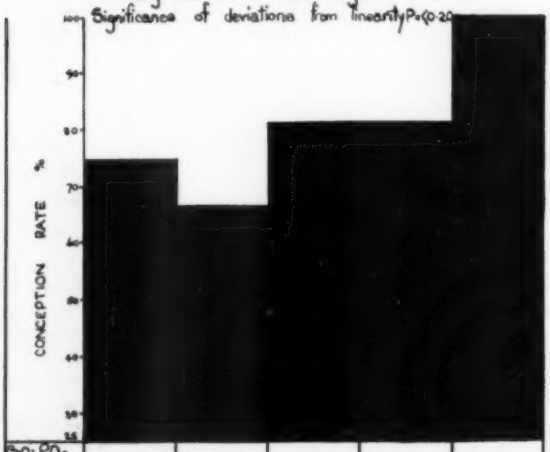
ϕ Amount above:— 28 gms. for maintenance. 19 gms. per gallon of milk.

DIAGRAM D_2

Relationship between $CaO:P_2O_5$ ratio and conception rate for animals receiving 20 gms. or more excess P_2O_5 and served during Dec: 1949 and Jan: 1950

Significance of linear regression $P < 0.15$

Significance of deviations from linearity $P < 0.20$



$CaO:P_2O_5$ ratio (P_2O_5 expressed as 1)	0.6 - 0.99	1.0 - 1.39	1.4 - 1.79	1.8 - 2.19	>2.2
No: of animals	28	124	22	11	4
% holding to first service	75	66	82	82	100

Total number of cows and heifers 189

Average conception rate (based on first service) 70.9%

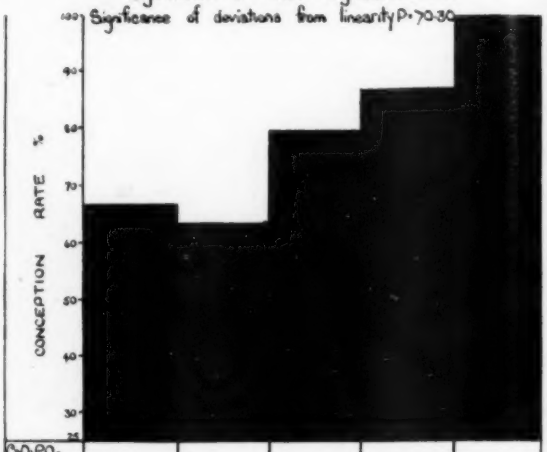
ϕ Amount above:— 28 gms. for maintenance. 19 gms. per gallon of milk.

DIAGRAM D_3

Relationship between $CaO:P_2O_5$ ratio and conception rate for animals receiving 20 gms. or more excess P_2O_5 and served during Feb: and March 1950

Significance of linear regression $P < 0.01$

Significance of deviations from linearity $P > 0.30$



$CaO:P_2O_5$ ratio (P_2O_5 expressed as 1)	0.6 - 0.99	1.0 - 1.39	1.4 - 1.79	1.8 - 2.19	>2.2
No: of animals	48	86	15	8	10
% holding to first service	67	64	80	88	100

Total number of cows and heifers 167

Average conception rate (based on first service) 69.6%

ϕ Amount above:— 28 gms. for maintenance. 19 gms. per gallon of milk.

Summary

1. The analysis of data collected during a survey of 89 herds in which 787 cows and heifers were served for the first time during October 1st, 1949, to March 31st, 1950, showed that there was no significant difference in conception rate throughout the winter. Reproductive efficiency was of the same order during the early months when the reserves of vitamin D could be presumed to be satisfactory as it was at the end of the period of winter housing when these reserves would have become depleted.

2. When the vitamin D status was high, fertility was not related to phosphorus intake within the range observed.

3. When the vitamin D status was low a rise in phosphorus intake led to improved fertility.

4. In those animals having a low phosphorus intake, the effect of the $CaO : P_2O_5$ ratio on fertility was apparently influenced by the vitamin D status. The conception rate decreased more markedly with widening ratio as the vitamin reserve became depleted during the winter period.

5. In those animals having a high phosphorus intake a widening ratio was associated with an increase in fertility. This increase was more marked when presumably the vitamin D reserves had become depleted than it was at the beginning of the observation.

Acknowledgments.—We wish to acknowledge our indebtedness to Dr. R. F. Montgomerie for his continued help and encouragement, to Dr. J. Trevan, F.R.S., and Mr. P. A. Young for invaluable help with statistical analyses, to Dr. G. D. Robinson, Superintendent, Kew Observatory, for the data he has provided, and to Miss H. M. Newington, who has abstracted from the records much of the information presented in this paper.

MODERN TRENDS IN DRUG THERAPY*

BY

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The science of chemotherapy has shown many dramatic advances during the last 15 to 20 years. When it first began about 50 years ago it was the interest of only a handful of chemists and biologists. At that time most of the work in therapeutics was concerned with sera and vaccines and in the veterinary field with the necessary task of determining by pathological and other studies the aetiology of the many diseases of livestock.

Chemotherapy, like many other great enterprises, had then small and slow beginnings and after a number of early discoveries, mostly of German origin, it moved quietly along through the 'thirties. The startling discovery of prontosil and the subsequent development of sulphanilamide received world-wide attention and showed for the first time that the conquest of bacterial infections by the systemic use of chemicals was possible. Increased interest in chemotherapy as a field of scientific endeavour was at once apparent in many countries, notably in Britain and in the United States. During the last war were made many of the great discoveries we have all witnessed. Supremacy in this field passed quickly from the Germans to ourselves and to the Americans—the German teams, already disrupted by the racial policy of Hitler, being finally halted in their work by the breakdown of their national economy.

To the British, despite all the difficulties in which we found ourselves during the war years, fell some of the greatest discoveries in this field and, as in most of the scientific endeavours of that period, our record is a good one.

Since the end of the war there have been remarkable increases in the amount of effort applied to chemotherapy in terms of manpower and money, and in no country more so than in America. There they now have great numbers of people and huge resources engaged in this work. Compared with this effort, which has already produced some very notable advances, our own endeavours appear small and at times insufficient, but we hope perhaps to make up in quality what we lack in quantity. Certainly we have not yet lagged behind in inventiveness, nor does it seem likely that we shall do so.

Some idea of the revolutionary changes which have been made in drug therapy during the last 20 years or so is given by a recent survey of prescriptions issued by American doctors. This shows that more than 90 per cent. of all prescriptions issued at present in the United States could not have been fulfilled in 1935, an amazing state of affairs when it is realised that many of the therapeutic agents then in use had been continuously employed for several centuries. We in this country are doubtless rather more conservative, but there is no doubt that somewhat similar changes have occurred here also.

If one reviews trends and progress even as frequently as at yearly intervals, such is now the tempo of discovery that many new topics require attention. It is to a few of these newer developments that we must now turn.

Epilepsy and Nervous Disorders.—The treatment and control of epilepsy, epileptiform convulsions, and other nervous states, particularly in the dog, has long been unsatisfactory. Not only has there been extensive argument concerning the aetiology and pathology of the various nervous states but there has been a lack of drugs which were entirely suitable for the treatment of animals. In the human subject the clinical pathology and the differentiation of the various conditions have been quite accurately determined. Clinically, true epilepsy in man is a chronic affection of the nervous system marked by repeated intervals of unconsciousness and often attended by convulsions. If it is associated with a definite lesion of the brain it is known as symptomatic epilepsy and if there is no organic defect as idiopathic epilepsy. Occasionally it is confined to one or two groups of muscles or to one side of the body when it is known as focal or local epilepsy.

The electroencephalograph has recently provided much more detailed knowledge of epilepsy and because of this, epilepsy in man is now generally classified according to characteristic discharge patterns as grand mal epilepsy, petit mal epilepsy, and psychomotor epilepsy. Just how the epilepsies or epileptiform conditions of animals are to be fitted into these schemes and patterns has yet to be determined but it would appear that in animals there are parallel conditions to those encountered in man and possibly others in addition.

In the treatment of epilepsy or epilepsy-like conditions in animals a wide variety of drugs, ranging from simple bromides to complex organic chemicals, has been employed, but with none of them has it proved possible regularly to obtain control of the nervous state without marked hypnotic side effects. This is a serious difficulty since such animals often become unmanageable and further treatment impossible. The recent British discovery of a new drug, 5 - phenyl - 5 - ethyl - hexahydropyrimidine - 4 ÷ 6 - dione, or "Mysoline" for short, gives hope that we now have an anticonvulsant drug for animals which will not have the disabilities of those at present available. This new drug was discovered by Bogue & Carrington (1952) and is already giving very promising results in grand mal epilepsy in man. Dr. Bogue—who is, of course, a veterinarian—has demonstrated that the new drug regularly protects laboratory animals against electrically or chemically induced convulsions. It is of extremely low toxicity, both acute and chronic, and it has virtually no hypnotic action in doses many times those necessary to protect animals against induced convulsions. Already in trials against various types of naturally occurring nervous disorders of dogs it is proving very useful and the observations and clinical trials are being extended in order to assess the full value of the new agent as rapidly as possible.

Sulphonamide Drugs.—Recently there has been a tendency to advocate the use of complex sulphonamide mixtures in place of the more specific use of single chemical entities. This has arisen mainly from two considerations, firstly, that the excretion solubilities in man of mixed sulphonamides are often greater than those of their individual components, and secondly, because some of the sulphonamides which have been used have a rather narrow spectrum of activity which obviously can be widened by using several of them together. The trend, however, appears to be a passing one. The solubility question is not of great moment in animals since individual sulphonamides are already available which are

* Address to the Southern Counties Division, B.V.A., on October 9th, 1952.

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themselves highly soluble and because the urine of the larger species is already alkaline, so that dangers of crystalluria are minimal. Moreover, in advocating the use of sulphonamide mixtures rather scanty attention seems to have been given until recently to the antibacterial activity of the various mixtures. Weinstein & Murphy (1952), however, have recently completed a comprehensive survey of this aspect of the matter in which they have reached the following conclusions :—

1. The antibacterial activity of various mixtures of sulphonamides is unpredictable.
2. The effect varies widely with the species and strain of the organism involved.
3. Depression of bactericidal potency against both gram-positive and gram-negative bacteria frequently results from combining sulphonamides.
4. The results suggest that combinations of sulphonamides may have little clinical usefulness since they are often not as effective as the single agents which compose them.

The lesson from all this seems to be that in chemotherapy we should be careful not to turn the hands of the clock back to the old days of " polypharmacy " without the most critical examination of the reasons for so doing. Modern drugs are highly potent and selective. There is as yet no sure substitute for proper diagnosis by the clinician and enlightened selection of the right agent from the wide choice available to him.

Antibiotics.—It is perhaps appropriate at this stage to say something on the antibiotic field, for here, too, there has been the same tendency to press forward the use of antibiotic mixtures when single entities would have sufficed. This is particularly true in regard to bovine mastitis, especially in the United States, where formulations containing as many as five chemotherapeutic agents including two or more antibiotics are being advocated. The antibiotics utilised in clinical medicine are becoming increasingly numerous. Already nine are available in reasonable quantities—penicillin from mould ; streptomycin, aureomycin, chloromycetin, terramycin and neomycin from actinomycetes ; and bacitracin, polymyxin and aerosporin from bacterial sources. In addition, the Americans have just announced the discovery (1952) of a new antibiotic named achromycin which appears to be active against trypanosome infections and which shows considerable promise. Much work is being devoted both in the U.S.A. and here to the discovery of antibiotics active against virus infections or with more satisfactory action than streptomycin against tuberculosis.

It would be unfortunate if the high activities and usefulness of the antibiotics were to be lessened by their non-specific use. Already antagonism and interference one with the other in mixtures of antibiotics has been noted. Aureomycin interferes with the effectiveness of penicillin, and this is equally true of chloromycetin, although mixtures of penicillin and streptomycin and penicillin and bacitracin seem to be compatible.

The widening number of antibiotics now available emphasises not only the vast potentialities of this field of chemotherapeutic research but also underlines the unique properties of the original British discovery in this field, penicillin. This remarkable substance still remains the only fully potent chemotherapeutic substance which is virtually devoid of poisonous effects. It is the ultimate in selective toxicity which, as Albert (1951) and other writers emphasise, is the basic principle upon which all advances must be made. All of the other antibiotics so far discovered are more or less toxic and much work has been devoted to minimising side effects caused by them. In the United States methyl and propyl esters of parahydroxybenzoic acid are now being added to aureomycin and other antibiotics to control fungus infections which sometimes occur in human subjects under antibiotic medication. These are generally infections with Monilia species. It may be significant that in connection with the feeding of antibiotics for acceleration of growth, Quinn (1952) has just reported from Canada that such mould growths have caused deaths in pigs receiving diets supplemented in this way. Even the most careful tests of new antibiotics may fail to reveal obscure toxic effects. Chloromycetin provides an excellent example of this at the present time. Some patients under treatment with it have suffered a serious type of anaemia which has caused the Food and Drug Administration of the United States to undertake an investigation. In some cases the drug appears to depress bone marrow function and to cause irreversible changes. This has become apparent only very recently although most careful clinical trials of the drug have been undertaken and it has been in everyday use for some time.

Pending the findings of the Agricultural Research Council there is little further that can be said at the moment about antibiotic supplementation of the diet of pigs and poultry to accelerate growth and increase feed efficiency. Most of the trials conducted in this country tend to indicate that the general claims made in this matter are valid and that under trial conditions markedly beneficial results can be obtained with as small amounts of penicillin as 4 to 5 grammes per ton for pigs and 2 to 3 grammes per ton for poultry. For routine field use, however, it will probably be necessary to use somewhat larger amounts, possibly nearer the American average of 10 grammes procaine penicillin per ton. The tests also appear to confirm American findings that penicillin is as effective as aureomycin or any of the other antibiotics but, contrary to American findings, it does not appear to be necessary to add vitamin B_{12} to the diet in addition to the antibiotic. This is doubtless because there is wider use of fish meal in Britain whereas in America all-vegetable protein diets are frequently employed.

Although most of the work so far in antibiotic feeding has been concerned with pigs and poultry, it has recently been extended to other animal species, including calves and dogs. Young calves treated before the full development of the rumen appear to derive considerable benefit. This is particularly so in unthrifty and poorly nourished animals in which feeding checks scours and other alimentary disorders. Medication of calf milk and other calf feeds may well become popular.

Trials in dogs are claimed also to give promising results. Heiman (1952) has shown that puppies receiving antibiotic supplements in their diet make larger and steadier weight gains during their first eight weeks of life. The treatment appears to stimulate growth through the critical post-weaning period. Use of antibiotics, however, does not affect the normal size of the full-grown dog. Arnrich, Lewis & Morgan (1952) have also produced increased rates of weight gain in puppies by feeding antibiotics but autopsies have shown that the added weight and growth are due solely to increased fat deposition.

In America where, of course, most of this work has been done, widespread interest has been created recently by the successful production of synthetic sow's milk which has become available under the name of " Terralac." It is claimed that this new product allows baby pigs to be taken from the sow within 48 hours of birth, thus removing many of the dangers of suckling. " Terralac " can be medicated with antibiotics and it is claimed that with it three litters can be reared annually. Some 3,500 pigs have been fed on it during its trials with a total mortality of less than 5 per cent.

A further method of applying antibiotics to pigs which is under investigation is by means of implants. These implants are inserted subcutaneously at the base of the ear when the pigs are two to five days old and left *in situ*. Early results have indicated that at weaning, treated pigs show a 10 to 12 per cent. increase in weight compared with untreated controls.

Work in this field has not been confined, of course, entirely to antibiotics. Some years ago it was demonstrated that organic arsenical compounds produced growth-stimulating effects in chickens and now there are claims that various surface active agents do likewise. These substances, which are manufactured from fatty acids, are used industrially as detergents and emulsifiers and include such British products as "Stergene" and the "Lissapol" series of detergents. Only non-ionic materials of this nature give positive results. The mechanism of their action is obscure but they are already claimed to be longer acting than the antibiotics.

Finally, on the subject of antibiotics, now almost a science in themselves, as can be gathered by perusing the 1,790 pages of the new book on the subject published by Florey and co-workers, mention should be made of the successful chemical determination of the structure of terramycin. The molecule consists of carbon, hydrogen, nitrogen and oxygen, and it is thought that the high oxygen and nitrogen content is responsible for the compatibility of the drug with the fluids and tissues of living organisms. X-ray diffraction studies have shown that the structure of aureomycin is strikingly similar to that of terramycin but, as in the case of penicillin, all of these are much too complicated substances to offer much hope of successful commercial synthesis. Knowledge of chemical structure, however, does allow minor chemical changes to be made in the molecule and opens the possibility of tailor-making drugs for specific uses.

Radioactive Isotopes. Electronic Sterilisation.—While on the subject of molecular structure and all that that implies, passing mention should perhaps be made of radioactive drugs and of electronic sterilisation both of which are very much subjects of our own enlightened age.

Radioactive substances have received much popular attention and there have been many rather exaggerated claims for them, particularly in relation to the treatment of neoplastic diseases and other disorders. It is too early yet to be sure of the place they will have in therapy but it does seem probable that eventually they will prove valuable both in human and veterinary medicine. At the moment they are being used mainly as tracing devices in pharmacological investigations and in related work. With them, complicated metabolic processes can be followed and the fate of drugs traced through the body. The future may well see developments in their use in veterinary medicine both in diagnosis and in therapy. In man they have already been employed to diagnose tumours of the central nervous system, to identify metastatic lesions, to measure body spaces and blood flow, and to determine cardiac efficiencies. In therapy in man they offer advantages over other irradiation techniques by allowing greater localisation of effect and hence producing less damage to surrounding tissues. At the moment, radioactive iodine, radioactive phosphorus and radioactive gold are the substances most used. In man the iodine compound is being increasingly utilised in thyroid cancer and in hyperthyroidism, and the other two compounds have given promising results against certain types of leukaemia. The progress of work on atomic energy and related subjects will no doubt stimulate considerable advances in this field in the next few years.

Electronic sterilisation is at the moment of more direct interest to the manufacturer of drugs than to the clinician. By it, it may be possible to ensure complete sterility of all substances which are administered by the clinician where now this is only possible by very elaborate and costly methods or cannot be guaranteed. The method depends on bombardment of the contaminating organisms with high-frequency electrons. Most recent developments have been concerned with the use of radiations from radioactive atomic fission products and with these it has proved possible to sterilise sutures, blood plasma, various drugs and vaccines, and grafts from dogs and humans. The main obstacle at present to general use of electronic sterilisation is the very high cost of the process but the use of gamma rays from fission products might cheapen it considerably and allow its more general adoption.

Deodorants.—Coming now from these highly scientific matters, something should be said about a field of chemotherapy which is very much in the news at the present time and about which there is much controversy—the field of so-called deodorant substances, particularly chlorophyll. Chlorophyll as found in plants is, of course, about as old as time and tablets containing either natural or synthetic chlorophyll were claimed to have powerful therapeutic effects many years ago. Recently, however, chlorophyll has come into great prominence, especially in the United States, where despite a tenfold increase in local manufacture of the product it is being found necessary to import it from this country. In America it is already being incorporated in over a hundred products ranging from mouth washes to cigarettes and dog biscuits. The latest evidence that our American friends are convinced of the efficacy of chlorophyll as a deodorant comes from one of the penitentiaries where the governor has disallowed the use of chlorophyll toothpaste for fear that in the event of an escape of convicts the bloodhounds would have no trail to pick up.

The usage of chlorophyll in Britain has also been increasing recently because, as pointed out recently by the *Lancet* (1952), the public are now accepting the suggestions offered to them that a deodorant is a great help in the social life of a small island.

How effective, then, is chlorophyll and how does it work? No one really knows the answers to these questions. It seems unlikely that it is active in all the uses which have recently been claimed for it, from antibacterial effects in infected wounds to radical cures of cancer. It appears equally unlikely that small amounts of chlorophyll in furniture cream or other household articles can ensure that obnoxious smells are abolished. Yet chlorophyll is undoubtedly a substance of great biological activity and the structural similarity of its molecule to the haem molecule has long excited interest, the molecule of chlorophyll consisting of four pyrrol rings pivoting on a magnesium atom, while the haem molecule is similar except that the central atom is one of iron. Chlorophyll has unique properties of photosynthesis, building up sugars from water and carbon dioxide from the air and releasing oxygen. It may be that this oxygen release is the key to its deodorant action.

A number of scientific and semi-scientific tests have been undertaken with the object of resolving the question of whether or not chlorophyll does reduce body, mouth, and other odours. Most of these trials have claimed some degree of success both in human and veterinary medicine, especially in relation to halitosis, malodorous wounds, etc. Few trials, however, have been based on "straight" chlorophyll, but on proprietary preparations the exact nature of which is not fully disclosed. It has been recognised for some time that certain aldehydes are potent nasal anaesthetics even when present in the atmosphere in very high dilution, and it may well be that much of the ability as a deodorant ascribed to chlorophyll is due to the presence of these substances.

The recent finding that chlorophyll is not absorbed from the gut has made its suggested action on anatomically distant smells such as those which sometimes emanate from the axillae and feet even more difficult to understand. It may be significant that the American Medical Association, with plenty of material for study, has concluded that " not only is the mechanism of action unexplained, but it is not at all certain that the action exists except in the mind of the observer."

In the veterinary field the use of chlorophyll as a deodorant can be contemplated only for the dog and cat and possibly the pig. It would hardly seem logical to medicate any of the grazing species with a substance already present in large quantities in their food. For them another deodorant will have to be found for neither the horse nor the ox, the sheep nor the goat, has a monopoly of freshness despite its feeding habits.

Hypotensive Drugs.—Before concluding, brief mention must be made of four other topics in chemotherapy of current veterinary interest, *viz.*, hypotensive drugs, hyaluronidase, drugs active against acid-fast organisms, and cortisone.

Recently, at the British Veterinary Association Congress at Harrogate, Gordon Knight, in introducing some of his excellent films, mentioned the use of hypotensive drugs in controlling haemorrhage during an eye operation in the dog. The drugs in question were penta- and hexamethonium compounds which were originally introduced in man to lower the blood pressure in hypertension and to reduce gastric secretion. Continued use in man has not been without danger owing to toxic effects and side reactions, and because of this they have not been generally adopted. Weiss & Clark (1952), in South Africa, have made an investigation of their veterinary possibilities and find them valuable in epistaxis and delayed post-castration bleeding in horses. They also consider that they are indicated in all operations where haemorrhage is likely to be serious, such as tumour resections, amputation of the udder, etc. They also find that the use of pentamethonium before pentabarbitone anaesthesia reduces the amount of anaesthetic required by about 25 per cent.

The early observations with the methonium compounds were made mostly on dogs, but less data exist for other species. In dogs the blood pressure falls by some 60 mm. of mercury within 30 seconds of injecting the drug. It then rises fairly rapidly to 15 to 45 mm. of mercury below the original pressure and remains there for some time. Single-dose treatments in animals appear to be without much hazard.

Hyaluronidase.—The veterinary possibilities of hyaluronidase, the so-called spreading factor, have been discussed previously and little more need be said here. Wider experience with the product, especially in America, has stressed its value in large-animal work, in deep nerve blocks and in deep infiltrating local anaesthesia. With it a more uniform and a more certain anaesthesia is produced. As was expected, tests have shown that its use increases the rate of diffusion of calcium borogluconate when given subcutaneously to cows in the treatment of milk fever. It greatly decreases the risk of local tissue necrosis when large quantities of solution are injected but does not appear markedly to increase the rate of absorption. Hyaluronidase is well tolerated by udder tissues and it was thought that by aiding penetration it might increase the efficiency of the various substances used in the treatment of bovine mastitis. Unfortunately, there is, as yet, little evidence that this is so.

Drugs Active Against Acid-fast Organisms.—The important group of acid-fast organisms causing tuberculosis, Johne's disease, and leprosy is now slowly yielding to chemotherapy. Isonicotinic acid hydrazide, to which the free name of isoniazid has now been given, is the latest weapon against these infections but undoubtedly there will be others to follow. Isoniazid, another example of a well-known compound with unsuspected biological properties—it was first synthesised in Germany in 1912—has now been officially approved for general use in human tuberculosis by the United States Food and Drug Administration, but controversy continues as to its clinical value. In the mouse it causes a marked increase in survival time but it does not give sterilising cures and the mice die eventually from tuberculosis. In man, excellent clinical results continue to be reported with little toxicity and in animal tests toxic effects have been seldom or never recorded when therapeutic doses are employed. At present, trials are proceeding against Johne's disease in cattle and sheep but it is too early yet to have any indication of their results. It may well be that, as in the case of streptomycin among the antibiotics, the ultimate fame of isoniazid may rest on the fact that it is the first chemical substance to be shown to have marked activity against acid-fast organisms.

Cortisone.—Cortisone also has been dealt with in some detail elsewhere. Little more need be said here except that much of its development in general use has been inhibited because of the rather serious side effects which may occur. Because of this there has been continued effort to produce alternative substances to cortisone, one of which, 3,5-dioxo-1,2-diphenyl-4-n-butyl pyrazolidine, or phenyl butazone, as it is usually called chemically, has recently been announced. This compound is claimed to be as active as cortisone but with fewer side effects and is simpler to manufacture.

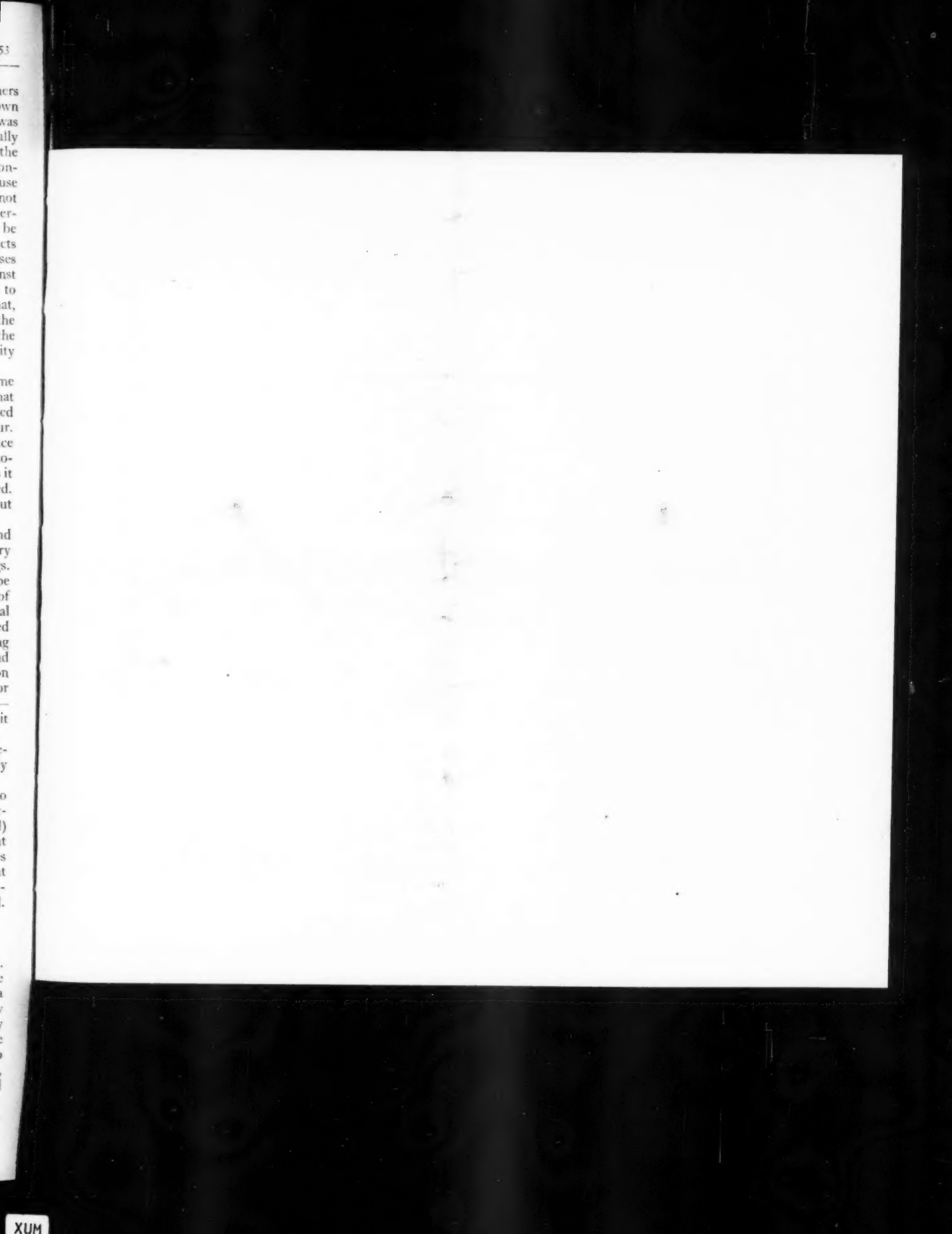
Meanwhile, development of cortisone in both human and veterinary usage continues. Recently, it has proved very successful in the treatment of mast cell tumours in dogs. These tumours occur in the cutaneous tissues and may be benign or malignant. One of the well-known effects of adrenal cortical hormones is to reduce the number of normal tissue mast cells. On this basis Bloom (1952) has treated a dog with multiple malignant mast cell tumours, and using doses of 100 mg. daily he obtained complete regression and disappearance of the tumours in nine days. This effect on mast cell tumours appears to be specific. Other work—for example, that of Green & Whiteley (1952) with sarcomata—indicates that cortisone may stimulate rather than inhibit growth of neoplasms.

Considerable developments yet await cortisone or cortisone-like substances in the veterinary field once they are freely available and their usage is an economic possibility.

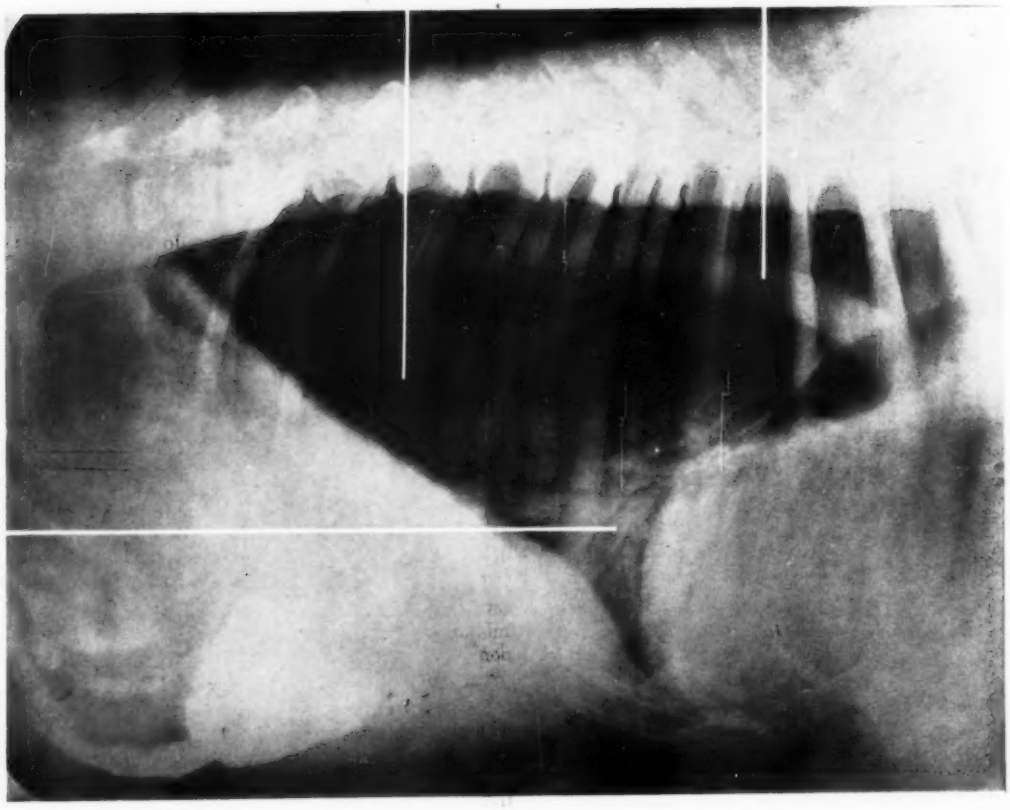
Shaw's work on bovine acetonaemia shows that this is so and shortly before his death Swales (1951) obtained spectacular results with cortisone in enterohepatitis (blackhead) of turkeys. Doses of 25 mg. of the drug brought about rapid recovery of treated birds despite the fact that autopsies revealed massive lesions in their livers. It is hoped that Swales' pioneer work in this connection, brought to a conclusion by his untimely death, will eventually be published.

Conclusion

The march of progress in chemotherapy moves quickly. Nothing now is regarded as wholly impossible. In the words of the old Army tag, " The impossible takes just a little longer." Many of the actions and activities now associated with organic chemicals were considered highly unlikely only a few years ago. The science of selective toxicity aims always at making compounds more toxic to pathogens and yet more and more specific. This, in turn, creates greater and greater problems for the chemist and the biologist—potent chemicals to kill the virus locked in the nucleus of the cell and yet not to harm the cell itself,



P. J. DALTON:
PNEUMOTHORAX IN AN ALSATIAN BITCH



compounds which somehow will select and be lethal to the runaway cells of malignancy but let the other body cells live. Great power and perfect aim is the objective, as described the other day in the case of a new synthetic insecticide which is toxic only to flies : " It makes them dance a weird fandango. It puts the fog in their brains, the fall in their arches, and the click-clack in their sacro-iliacs. There's a general unhinging of the joints and then the long sleep from which there is no return."

But such specific effect demands specific use. In the end all new advances require better diagnosis, wiser application, more mature judgment, and all depend for their proper use and reputation on the practitioner. So it is to him that they are dedicated and it is in his hands that their future rests.

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FINE CHEMICALS IN VETERINARY MEDICINE

At a meeting of the Fine Chemicals Group of the Society of Chemical Industry, held on November 14th at King's College, London, Dr. J. Carmichael, C.M.G., M.R.C.V.S., DIP. BACT., read a paper on " Fine Chemicals in Veterinary Medicine." Dr. Carmichael remarked that the application of fine chemicals to veterinary practice had followed generally the same pattern as in human medicine, but it was particularly appropriate that this subject should be discussed at the present time in view of the impending publication of the British Veterinary Codex. Although a great number of drugs used in veterinary medicine were included in the British Pharmacopoeia and the British Pharmaceutical Codex, there had been little or no authoritative information on standards of the substances used, and the projected Veterinary Codex would therefore fill an important gap. Dr. Carmichael then proceeded to survey the field of veterinary chemotherapy, discussing the advances which had been made in the treatment and prevention of such diseases as trypanosomiasis, babesiasis, coccidiosis and blackhead. He referred, also, to the development of modern insecticides and to the use of antibiotics and sulphonamides for bacterial diseases. Reference was also made to the antihistamines, to anaesthetics and to drugs used in the treatment of the milk fever complex.

The discussion on Dr. Carmichael's interesting paper was opened by Mr. S. J. Jolly, Assistant Editor of the Pharmaceutical Society's Scientific Publications. Mr. Jolly gave details of the impending British Veterinary Codex, saying that it would contain nearly 500 monographs of which approximately 70 were vaccines, sera and related products. Some 370 were for substances for which standards were provided by either the B.P. or the B.P.C. The remaining 60 monographs referred to substances which had a purely veterinary use or which were commercial grades of pharmaceutical drugs used in human medicine.

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Weekly Wisdom

Who ever knew Truth put to the worse in a free and open encounter?—Milton.

CLINICAL COMMUNICATION

PNEUMOTHORAX IN AN ALSATIAN BITCH

P. J. DALTON, M.R.C.V.S.,
Salisbury

An adult female Alsatian guard dog was found to be unwilling to leave its kennel to carry out its normal patrol duty, and after four days, during which it was kept under observation, it was returned to the central training school for surgical treatment for diaphragmatic hernia.

Whilst undisturbed the dog appeared to be normal, bright, and did not seek any particular posture, but any slight exertion caused panting and a pronounced acceleration in respiration (from 35 to 80 per minute) with maximum thoracic expansion, aided by abduction of the elbows. The pulse rate increased from 71 to 94 per minute, whilst the temperature remained normal. These symptoms abated after about 10 minutes at rest.

The increased thoracic dimensions, together with the four-day refusal of food, gave the dog a very " herring gutted " appearance whilst standing, as though there had been some displacement of abdominal contents, but on percussion of the chest a distinctive hollow note was obtained bilaterally from the dorsal half of the thorax, and on auscultation no pneumonic sounds could be detected over this area.

The respiratory discomfort was not increased by elevation of the hind quarters, nor ameliorated by raising the forequarters of the animal. Pneumothorax was confirmed radiologically.

Treatment.—A 14 BWG needle, 2 inches long, was thrust through an anaesthetised plaque between the fifth and sixth ribs approximately 1½ inches from the head of the ribs, and aspiration achieved by negative pressure produced by allowing water to run from an inverted BDH Vena flask ; 1,750 c.c. of air were removed over a period of 12 minutes, during which it was possible by auscultation to follow the increase in lung expansion.

The respirations became slower and less laboured, and within 30 minutes of the completion of the aspiration the animal ate voraciously. After-treatment consisted of sedation, light food and rest. Recovery was uneventful, the dog returning to its station within 10 days.

Comments.—The first radiographic exposures were made with the dog restrained on its side. This gave a poor result as the lung tissue flattened out on the lowermost side and consequently appeared on the skiagraph to occupy a relatively normal amount of the thoracic space. The plate produced was obtained with the dog standing up, and by using a tube distance of 4 feet (200 Ma. 75 kg. ·03 sec.).

Minute examination failed to reveal any thoracic puncture and it is thought that this is a case of pulmonary and pleural rupture.

On the station this dog was housed in a small kennel and was leashed by a slip chain to a 15-yard-long run wire. When excited it would hurl itself up and down this wire, barking furiously.

It is suggested that the dog, whilst about to bark, reached the end of the wire and its weight on the slip chain around its neck closed the trachea. By this means there would arise an increase in intra-pulmonary pressure sufficient to cause rupture.

ABSTRACTS

Cortico-adrenal Insufficiency in Ketosis*

The basis of this article is the postulate that ketosis in dairy cattle has its main origin in a temporary cortico-adrenal insufficiency. This postulate is founded on an interpretation of the clinical signs, but hitherto no experimental data have been forthcoming. The object of the research described was to determine whether significant changes in the cortico-adrenal activity as indicated by the urinary output of gluco-corticoid hormones could be detected in cows suffering from ketosis. This was studied by determining and comparing the urinary glucocorticoids from normal, pregnant and acetonaemic cows.

A detailed description is given of the technique of recovering the glucocorticoids from bovine urine and the method of assaying the amount of glucocorticoid by its effect on liver glycogen when injected into adrenalectomised mice.

Urine was obtained from two normal lactating cows, from two pregnant cows and from two acetonaemic cows, *i.e.*, six animals in all. In this small group of animals the pregnant cows showed an increase and the acetonaemic cows showed a decrease of cortico-adrenal activity as compared to that of normal lactating cows.

G. F. B.

* **Urinary Glucocorticoids as an Indication of Adrenal Dysfunction in Ketosis of Dairy Cattle.** PUNTRIANO, G. (1952). *Amer. J. vet. Res.* **13.** 129-131.

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Baby Pig Mortality*

At farrowing, 26 little pigs were taken from the sows, divided into two groups, and fasted. One group was kept at a mean environmental temperature of about 59° F.; the other at 88° F. The warm environment was produced by a 200-watt incandescent bulb covered by a metal hover, in a cubicle placed in a steam-heated room.

The group kept under warm conditions lived three times as long as the other group. There was less loss of body-weight in the warm group. Various other tests were made at autopsy, and the most significant results indicated little variation between the "warm" and "cold" groups as regards blood glucose, liver glycogen levels and body temperatures.

The common denominator was depletion of the carbohydrate reserves. The author "logically concludes" that the almost complete exhaustion of the carbohydrates was the most critical result of fasting, and that this critical stage was postponed by the higher environmental temperatures. The warmer environment reduced body-heat loss and conserved energy stores so as to allow life to be prolonged about 300 per cent. One effect of chilling may be the rapid depletion of the carbohydrates available in the body. The importance of environmental temperature would be even greater in the event of agalactia in the sow. It appears likely that preservation of piglet life and rate of weight gain would be greater in cold weather when artificial heat is provided. Additional data are needed on that point.

D. J. A.

* **Studies on Baby Pig Mortality: Influence of Environmental Temperature on Fasting Newborn Pigs.** MORRILL, C. C. (1952). *Amer. J. vet. Res.* **13.** 322-324.

Cardio-vascular Changes in Nephritis*

A study was made of the gross and histological changes in the cardiovascular system in a series of dogs affected with acute (eight males) or chronic (23 males, one female) nephritis. Changes of two types were present. Those of the first type, comprising cardiac hypertrophy (in 6 of 16 dogs), medial hypertrophy in muscular arteries (in most animals) and fibrinoid changes in the renal glomeruli (15 of 22 dogs) and in the arterioles of the kidney (8 of 15 dogs) and elsewhere, were found in cases of chronic nephritis, and resembled the morphological changes seen in dogs in which hypertension has been induced experimentally. Changes of the second type were of an acute necrotising inflammatory nature, and were seen (in five acute cases and one chronic case) principally in the left auricle, pulmonary artery and aorta; these lesions seemed to be identical with those occurring in dogs, maintained on a high fat diet, in which renal failure has been produced experimentally by bilateral nephrectomy, or the injection of mercuric chloride or uranium nitrate. Changes of this second type, which probably are not of hypertensive origin, appear to undergo healing and scarring, as scars in similar positions were found in eight of the 24 cases of chronic nephritis. The lesions are well shown in the illustrations.

E. C.

* **Morphological Changes in the Cardiovascular System Associated with Nephritis in Dogs.** PLATT, H. (1952). *J. Path. & Bact.* **64.** 539-549.

REVIEWS

[Health and Agriculture in China: A Fundamental Approach to Some of the Problems of World Hunger. By JAMES CAMERON SCOTT. (1952.) Faber and Faber, Ltd., 24, Russell Square, London, W.C.1. Price 25s. net.]

The author was formerly Professor of Soil Science at Cheelung University, and this book records the results of a study financed by the International Health Division of the Rockefeller Foundation.

It was said, rather unkindly perhaps, that the best thing that people produce is thrown away. Such a statement as this may be passed off as pure cynicism, but it has considerable significance in those countries which depend greatly upon the preservation of human excreta in order to maintain soil fertility. In China, food production would suffer a severe blow unless steps were taken to preserve such material, since the soil is desperately short of organic matter, which is readily burnt out of it unless great care is taken. The book under review discusses at length the methods employed in collection, drying, composting and applying this valuable natural by-product of human existence.

Two main issues are clearly involved, the first one being, as already mentioned, the agricultural implication, but the second is the equally important one of human health. Operating from Cheelung University, a number of American workers and their collaborators, including the author of this publication, were able to carry out extensive observations on both aspects of the problem involved and the story unfolded is of intense interest to those interested in agriculture and public health.

The appalling hygienic conditions which prevail result in the distribution of a long list of enteric diseases, including

number of helminthic conditions. It is estimated that over 535,000,000 people in China are parasitised by 6,080,000,000 ascarids and over 11 per cent. of all deaths are associated with faeces-borne diseases. Whilst there is a growing awareness of the need for better conditions, illiteracy is the greatest bar to progress.

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[Photosensitisation in Diseases of Domestic Animals. By N. T. CLARE. Commonwealth Agricultural Bureaux, Farnham House, Farnham Royal, Bucks. Price 7s. 6d.]

This is an excellent review of the subject, complete with references and good photographs. The nature of the mechanism involved is discussed, distinction being made between sunburn and true photosensitisation. The symptoms and classification of the different conditions included under this heading are dealt with in full and make interesting reading.

Whilst the problem is of no great significance in this country, sporadic cases of photosensitisation have been encountered by most workers in the field and an explanation of the remarkable phenomena observed will be appreciated. Of the many plants which predispose the animal to the effect of light, only a few, such as St. John's wort and buckwheat, are likely to be encountered in the British Isles.

NOTES AND NEWS

Diary of Events

Jan. 17th.—Meeting of the Biochemical Society, King's College, Strand, W.C.2, 10.30 a.m.

Jan. 21st.—Meeting of the South-Eastern Division, B.V.A., at Maidstone (Royal Star Hotel), 2.30 p.m.

Jan. 21st.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at 1, Wimpole Street, W.1, 5 p.m.

Jan. 29th.—Meeting of the Western Counties Division, B.V.A., at Exeter (Imperial Hotel), 2 p.m.

Jan. 30th.—Meeting of the Lincolnshire and District Division, B.V.A., at Lincoln (Saracen's Head Hotel), 2.15 p.m.

Feb. 12th.—Annual Ball of Glasgow University Veterinary Medical Association, to be held at the Rhul, Sauchiehall Street, Glasgow, from 8 p.m. to 2 a.m.

Feb. 12th.—Royal (Dick) School of Veterinary Studies Annual Ball, at the Assembly Rooms, George Street, Edinburgh.

Feb. 27th.—Annual Ball of the Veterinary Society, Faculty of Veterinary Science, The University, Liverpool, to be held in the Students' Union from 8.0 p.m. to 2.0 a.m.

Council and Committee Meetings of the B.V.A.

The following arrangements for the Council and Committee meetings of the B.V.A. in January, April and July of 1953, have been made by Council B.V.A.:—

January 14th, 15th and 16th in London.
April 29th, 30th and May 1st in Edinburgh.
July 29th, 30th and 31st in London.

The next quarterly meetings will be held in London on January 14th, 15th and 16th, 1953, in the following order:—

Wednesday, January 14th.—10 a.m., Home Appointments Committee; 11.30, Parliamentary and Public Relations Committee; 2 p.m., Organising Committee; 4 p.m. Provisional Committee.

Thursday, January 15th.—10 a.m., Veterinary State Medicine Committee; 12 noon, Finance Sub-committee; 2.30 p.m., General Purposes and Finance Committee.

Friday, January 16th, at the Connaught Rooms:

9.30 a.m.—Special Meeting of Council to deal with: (1) New premises for the Association; (2) Report of the Departmental Committee on Licences under Section 7 of the Veterinary Surgeon's Act, 1948.

11 a.m.—Ordinary Meeting of Council.

R.C.V.S. Council and Committee Meetings

The next series of meetings will be held in London on February 4th, 5th and 6th (Council).

PERSONAL

The New Year Honours

The first New Year Honours to be conferred by the Queen were announced on Thursday of last week. It is to be regretted that in a list of such formidable dimensions there appeared the name of but one member of the veterinary profession, but for that reason congratulations will be the warmer for Mr. Ernest Raymond Callender, M.R.C.V.S. A Superintending Veterinary Officer of the Animal Health Division of the Ministry of Agriculture, resident at Lytham, Lancs, Mr. Callender was awarded the O.B.E., in the Prime Minister's List. Among the many other awards which will have given pleasure to our readers, none was more welcome than those of the C.B.E. to Mr. J. K. Knowles, the General Secretary of the National Farmers' Union, and to Lieut.-Colonel H. M. Llewellyn, who won the second of Britain's gold medals in the Olympic Games of 1952, jumping on Foxhunter in Helsinki.

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Mr. C. V. Dayus: Agricultural Adviser to the High Commissioner for New Zealand

Mr. C. V. Dayus, M.R.C.V.S., has recently arrived in London to occupy the position of Agricultural Adviser to His Excellency, the High Commissioner for New Zealand. *En route* he had the opportunity to spend a short time in the United States enabling visits to be made to the School of Veterinary Science in the University of California, the main meat packing plants in Chicago and the Agricultural Research Station at Beltsville, Maryland.

In New Zealand, Mr. Dayus has been 29 years in the service of the Department of Agriculture, the major portion of this time being spent in the South Island in the capacity of Livestock Superintendent of the Animal Industry Division.

The nature of the work in the Dominion provided experience of farming practices, operations of the meat industry, together with husbandry and veterinary problems falling within the scope of a Government Department.

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Mr. Peter R. Ellis, B.SC., M.R.C.V.S., whose address is now Repartiçao Sanitaria Panamericana, Centro Panamericano de Febre Aftosa, Caixa Postal 589, Rio de Janeiro, Brazil, writes: "For the past six months I have been working as epizootiologist and field adviser with the Pan-American Foot-and-Mouth Disease Centre. This centre is an international technical assistance project of the Organisation of American States and is designed to give assistance in all phases of foot-and-mouth disease work to the countries in the Americas."

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Ministry's Veterinary Field Staff: Changes in Personnel.—The following changes are announced.

Appointments to the Permanent Staff.—

Mr. J. Corder, M.R.C.V.S., stationed at Norwich.
Mr. I. Dickson, M.R.C.V.S., stationed at Leicester.
Mr. W. B. Milburn, B.SC., M.R.C.V.S., stationed at Truro.
Mr. F. E. Shearman, M.R.C.V.S., stationed at Exeter.

Resignations from the Permanent Staff:—

Mr. R. W. M. Gover, M.R.C.V.S., late of Trowbridge.
Mr. A. L. Lambert, B.SC., M.R.C.V.S., late of Norwich.
Mr. S. Parkinson, B.V.SC., M.R.C.V.S., late of Hereford.

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Birth.—CENCORA.—On December 29th, 1952, to Vera, wife of T. Cencora, M.R.C.V.S., at 22, Limpsfield Avenue, Thornton Heath, Surrey, a daughter, Stephanie Jane—a sister for Michael Julian.

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Marriage.—BETTS—BATTERSBY.—On December 10th, 1952, at St. Ann's, Manchester, Alan O. Betts, only son of Mr. and Mrs. A. O. Betts, Wroxham House, Wroxham, Norfolk, to Joan M. Battersby, second daughter of Mr. and Mrs. P. Battersby, of Manchester. Dr. K. C. Sellers was best man.

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R.C.V.S. Obituary

McNEIL, John, M.R.C.V.S., Captain S.A.V.C. (retd.), Wynberg (Cape, South Africa. Graduated Glasgow, July 18th, 1896. Died (date unspecified) 1952; aged 84 years.

Mr. John McNeil, M.R.C.V.S.: Veterinary Surgeon to Cecil Rhodes

In its issue of December 22nd the *Greenock Telegraph* states that word has just been received of the death at Capetown, South Africa, of Mr. John McNeil, M.R.C.V.S., formerly of Greenock. After graduating with honours he practised in Greenock for several years before leaving for South Africa, where he was Veterinary Surgeon for Cecil Rhodes, who then owned herds of animals all over the country.

At the outbreak of the Boer War Mr. McNeil joined the British Forces and became a captain. In the First World War he also played a prominent part, and followed up General Botha in his drive into West Africa. On returning to civil duties after the war he settled for a time in Johannesburg, but later moved to Capetown for health reasons.

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THE LATE DR. J. T. EDWARDS

A Tribute to his Work in India

Major G. K. Shaw, R.A.V.C. (retd.), writes as follows from Sundale, Hilton Road, Natal, South Africa:—

May a humble member of the profession privileged for a few short weeks to be associated with the late Dr. J. T. Edwards be allowed to express his profound sorrow at the sudden passing of one who surely will be numbered among the greatest of veterinarians? A man of mighty intellect, of great energy, kindness and understanding, his loss is irreparable. A rare friend to the Royal Army Veterinary Corps, there can be few officers in that corps who served in India during his time there but will remember with gratitude his outstanding help and advice in the solving of many problems in tropical diseases with which from time to time they were confronted. A letter to him at Mukteswar always produced, very often by return post, a detailed account of the trouble, and the correct way to deal with it.

In 1927 I, with three other officers in the corps, had the good fortune to be sent to Mukteswar on a 10 weeks' post-graduate course, and there met Dr. Edwards, who at the time was Director of the Imperial Bacteriological Laboratory. Six days of the week our day in the laboratory commenced at nine, and with a break of an hour for lunch and half an hour for tea we were kept at it until seven and often later in the evening. When Edwards slept we never knew, for from our quarters before retiring for the night, we could see across the valley the light in his laboratory and knew he was at work. Invariably that light was still there at dawn in the morning. Yet he was in his office fresh and eager when we arrived for our daily round.

Busy with his work on rinderpest, which involved the use of hundreds of the small Himalayan bulls, he was at the same time carrying out experimental treatment in ponies affected with surra in its nervous form, and also that other obscure condition in horses, kumri. (As kumri also exhibits inco-ordination of the hind quarters Edwards thought that there might be some connection between the two.) He, I think, introduced, and if not, certainly perfected, the treatment of both these conditions by intrathecal injections (a very delicate little operation) of naganol into the sub-dural space between the atlas and the axis.

In addition to his research work he was responsible for the administration, organisation and general well-being of what was, and probably still is, the largest laboratory of its kind in the world.

Now he has gone to a well-earned rest but he has left more than enough in the files of our professional and other journals to make the present generation, and posterity, ponder and exclaim, "that was a man."

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HARRY STEELE-BODGER MEMORIAL FUND

Donations to this fund should be made payable to the "Steele-Bodger Memorial Fund" and sent to the Hon. Treasurer of the Appeal Committee:

S. L. Hignett,
Steele-Bodger Memorial Fund,
British Veterinary Association,
36, Gordon Square,
London, W.C.1.

The third list of donations will be published in our next issue.

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ANIMAL HEALTH TRUST

Formation of a Scientific Advisory Committee

The Animal Health Trust announces the formation of a Scientific Advisory Committee to assist in the development of its research programmes, and to advise the Trust on the granting of various educational awards which are an integral part of its work.

Professor J. B. Buxton, F.R.C.V.S., Principal of the Royal Veterinary College, has been elected Chairman of the Committee and Sir Frank Ware, Veterinary Adviser to the Canadian Government in London, Deputy Chairman. The other members of the Committee are:—

Professor W. I. B. Beveridge, D.V.SC., Department of Animal Pathology, University of Cambridge; Dr. Kon, Head of the Nutritional Department of the National Institute of Research in Dairying; Dr. T. Moran, C.B.E., D.SC., Director of Cereal Products Research Association; Professor C. W. Ottaway, F.R.C.V.S., Department of Veterinary Anatomy, University of Bristol; Dr. A. W. Stableforth, D.SC., D.V.S.M., M.R.C.V.S., Director of Veterinary Laboratories, Ministry of Agriculture at Weybridge; the Rt. Hon. Lord Stamp, B.CH., M.A., M.B., British Post-Graduate Medical School; Dr. E. L. Taylor, D.V.SC., M.R.C.V.S., the eminent veterinary parasitologist, and Dr. F. A. Cooper, M.A., A.M.I.CHEM.E., of the Cooper Technical Bureau, Berkhamsted.

As a result of the formation of this Committee, it will be possible to ensure that the research work done in the Animal Health Trust's four research stations—respectively for farm livestock, horses, poultry and dogs—will not overlap with animal research being done elsewhere.

In addition to becoming Chairman of the new Committee, Professor Buxton was elected a member of Council at the annual meeting of Trustees and Council, presided over by His Grace the Duke of Norfolk, President of the Trust. Mr. J. N. Ritchie, B.SC., M.R.C.V.S., Chief Veterinary Officer of the Ministry of Agriculture and Fisheries, also was elected a member of Council.

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LEGAL NOTES

Failure to Notify Anthrax.—The *Derbyshire Advertiser* reports that at Bakewell Magistrates' Court recently, Tom Slater (77), of Moorland View Farm, Ashford Road, Bakewell, farmer, was fined £5 for being the owner of a diseased cow infected with anthrax and failing to notify the fact to the police on November 8th; £5 for failing to detain the carcase at his premises; and £2 for aiding and abetting Harry Ardern to cut and bleed the carcase of a cow which had died as a result of anthrax infection. He was also ordered to pay £4 3s. costs. The Chairman said that the Bench took a very serious view of the case and added: "Although you might not have realised that the animal was suffering from the disease, we do consider that you ought to have been suspicious that it had something about which you should have found out. It was your duty to call in a veterinary surgeon, or report the matter to the police."

Harry Ardern (73), Field Farm, Bakewell, farmer, was fined £10 for cutting and bleeding the carcase of a cow which had died as the result of anthrax infection.

The Chairman told him: "We think you were more to blame than Mr. Slater."

Mr. O. V. Cockerton represented the defendants, who pleaded guilty to all the summonses.

Supt. T. S. Wright said that Slater had 22 cows, seven stirks and two horses on his farm. At 7 a.m. on November 8th he saw a Shorthorn cow, which was the subject of the summons. It appeared to be quite healthy, but when he saw it two hours later it was lying down and seemed to be dying. Ardern, who lived near and who arrived about half an hour later, found that the cow was just dead. He stuck and bled it in the shed, and said he would get more for it as dog meat. The blood from the cow went into the liquid manure tank outside the building. Ardern, on instructions, telephoned to Mr. Abbott, of Brackenfield, Wessington, and a lorry came and removed the carcase the same day.

Mr. Dennis Sutton, a veterinary surgeon, later carried out a *post-mortem* examination, and it was found that the animal had been suffering from anthrax.

Mr. Sutton said in evidence that he examined the carcase of the animal and he was satisfied that it had died of anthrax.

P.C. Mackenzie gave evidence and Mr. John M. McKellar, of Derby, divisional veterinary inspector for the Ministry of Agriculture, said the case was reported to him in the usual way and he gave instructions with regard to the action to be taken.

In the case of sudden and unexpected death, anthrax should be the first thing to be suspected and the owner should report the matter to the police.

For some time the Ministry had been giving a lot of publicity throughout the country to the disease. A large number of outbreaks had been occurring and the anthrax position was very unsatisfactory.

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Sheep Neglected on Marshes.—At Southminster Court on December 20th, Albert Victor Cooch, West Wycke, Burnham, was charged with causing unnecessary suffering to sheep on Burnham Marshes, and his employer, Charles William Totham, Sheepcotes, Southminster, was summoned for permitting the offence. Both were convicted after pleading not guilty and were defended by Mr. David Freeman.

For the R.S.P.C.A., Mr. Gordon Jones said the case was one of serious neglect. When an inspector visited the farm he found several sheep suffering from fly strike and showing signs of considerable distress. In addition some were lame and suffering from foot rot of some standing.

In the field was the carcase of a sheep that had died quite recently, and extensive maggot infestation was found, while one hoof was almost destroyed by foot rot. Some of the animals showed blistering of the flesh, caused, it was alleged, by treatment with too strong a solution.

Horace Edmund Pope, chief inspector, R.S.P.C.A., said he went to the farm with P.C. Hassan, and in a field saw about 27 sheep. Some were lame, and at least five had large areas of sores. There had been some attempt to dress them, but witness thought the solution was too strong, as there was blistering. There were maggots on the infected areas, said witness, and so far as he could see there had been no attempt to treat the animals' feet, either by paring or dressing. Near a ditch was the carcase of a teg, deeply infected by maggots.

Mrs. Lucy Robinson, M.R.C.V.S., of Purleigh, described the condition of the dead animal, which she thought must have suffered considerably and been grossly neglected. Four or five of the other sheep were very lame and had large areas of fly strike.

Cooch said he had looked after sheep all his life, and had never had any trouble before. On August 11th he examined all the sheep and found nothing wrong, with the exception of one which was slightly lame, and which was dressed. The following day he sent one of the men to examine them, and he reported that everything was all right. The flock was inspected once a day, and had been dressed regularly with a special fly dressing used according to the maker's instructions.

Totham said he normally visited West Wycke four or five times a week, but had not been there for five days before August 13th. He had given instructions for the sheep to be dressed regularly, and had supplied the necessary materials. For the defence Mr. P. G. Ledger, M.R.C.V.S., said fly strike increased during humid weather, and it was possible for maggots to arrive within 24 hours. Witness saw one or two lame sheep in the flock. They had been treated, and he would say they had also been dressed for fly.

Each defendant was fined £15 and eight guineas costs.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

ANTHRAX:

Berks.—Cross Roads Holding, Cumnor, Oxford (Dec. 30th).

Bucks.—Moat Lane, Prestwood, Great Missenden (Dec. 22nd).

Buteshire.—Langalchorad Farm, Kingarth, Isle of Bute (Dec. 27th).

Cheshire.—Smith's Green Farm, Lower Withington, Macclesfield (Dec. 25th); Charity Farm, Astbury, Congleton; Fields Farm, Warmingham, Sandbach; Bull Gate Farm, North Rode, Congleton (Dec. 30th).

Derbys.—Stanley Hall Farm, Stanley, Derby (Dec. 20th); Hoe Grange Farm, Brassington, Derby (Dec. 30th).

Devon.—Kerswell Barton, Broadclyst, Exeter (Dec. 22nd); Gosford Pines Farm, Ottery St. Mary (Dec. 25th); Oaklands, Monkton, Honiton (Dec. 30th).

Essex.—Bury Farm, High Easter, Chelmsford (Dec. 22nd); Pig Sties, Sewer Lane, Braintree (Dec. 23rd); Baldwins Farm, Barling Magna, Southend-on-Sea (Dec. 24th); Beckney Farm, South Fambridge, Hockley; Deerleays, Knockholt Road, Halstead; Hunwicks Farm, Baythorne End, Birdbrook, Halstead; Bury Farm, High Easter, Chelmsford; The Coppice, Near Church Lane, Hutton, Brentwood (Dec. 30th).

Glos.—Rectory Farm, Turkdean, Northleach (Dec. 20th); Old Hurst Farm, Slimbridge; Village Farm, Easter Compton, Bristol (Dec. 22nd).

Hunts.—Lodge Farm, Easton, Huntingdon (Dec. 30th).

Kent.—Wee Castle, London Road, West Kingsdown, Sevenoaks (Dec. 24th); Share Farm, Horsmonden (Dec. 30th).

Lancs.—Breightmer Fold Farm, Bolton; Dick Dads Farm, Mellor, Blackburn (Dec. 23rd); Baldwin Hill Farm, De Lacy Street, Clitheroe (Dec. 25th); Old Hall Farm, Huncoat, Accrington; Lark Hill Farm, Little Eccleston, Preston (Dec. 30th).

Norfolk.—Home Farm, Letton, Thetford (Dec. 23rd) Gurdons Farm, Letton, Shipdham, Thetford (Dec. 24th); Northill Farm, Letton, Shipdham; Wood Farm, Upper Sheringham, Sheringham; Park Farm, West Bilney, East Winch, King's Lynn (Dec. 30th).

Northants.—Hilly Farm, Burton Latimer, Kettering (Dec. 30th).

Northumberland.—Carvaron Farm, Greenhead (Dec. 25th); Low Town Farm, Greenhead, Carlisle (Dec. 30th).

Perths.—Bachilton Farm, Methren, Perth; Airleywight Farm, Bankfoot, Perth; Cattle Truck No. 52236, Hay's Bank, Glover Street, Perth (Dec. 30th).

Salop.—Upper Farm, Sheriffhales, Shifnal (Dec. 22nd); Purslow Farm, Clunbury, Craven Arms (Dec. 25th).

Somerset.—Moss Farm, Ruishton, Taunton (Dec. 30th).

Staffs.—Upper Fleet Green Farm, Newtown, Longnor, Buxton (Dec. 22nd); Hott Lane Farm, Kingsley, Stoke-on-Trent; Leason Farm, Hilderstone, Stone (Dec. 27th).

Suffolk.—Appleacre Farm, Hundon, Clare, Sudbury (Dec. 25th).

Sussex.—Toll Farm, Blackham, Tunbridge Wells (Dec. 30th).

Warwicks.—Bruntingthorpe House, Bruntingthorpe, Rugby (Dec. 30th).

Wilts.—Totteridge Farm, Milton, Pewsey; Manor Farm, Rowde, Devizes (Dec. 25th).

Yorks.—Walker Farm, Darley, Harrogate (Dec. 20th); Moorcroft Farm, Leymoor, Golcar, Huddersfield (Dec. 30th); Thorncliffe Farm, Kirkburton, Huddersfield; Lower Hanggoose Farm, Silsden, Keighley; Doctor House Farm, Doctor Lane, Scouthead, Oldham; Old Hall Farm, Grimethorpe Barnsley; Hall Farm, Cemetery Lane, Thirsk (Dec. 31st).

FOWL PEST:

Cambs.—12 and 17, Benwick Road, Doddington, March (Dec. 23rd); Highbury, Wimblington, March; 38, Bridge Street, Chatteris (Dec. 29th).

Derbys.—95, Bentiun Road, Shuttlewood, Chesterfield; The Myrtles, Woodhouse Lane, Beighton, Sheffield (Dec. 31st).

Hants.—Sunnyside, Salesbury Road, Broughton, Stockbridge; (Dec. 24th); 8, East Delph, Whittlesey, Peterborough (Dec. 30th).

Herts.—Little Berkhampstead House, Little Berkhampstead, Hertford (Dec. 23rd).

Hunts.—Magdalen House Farm, Wyton, Huntingdon (Dec. 25th).

Kent.—Castle Hill Nurseries, Rotherfield, Tunbridge Wells (Dec. 23rd).

Lancs.—18, Orrell Lane, Burscough, Ormskirk (Dec. 23rd); 4, Pitt Street, Audenshaw, Manchester; Poultry Houses at rear of 227, Guide Lane, Audenshaw, Manchester; Ash Villa, Fernhead Lane, Fernhead, Warrington; Bonds Farm, Goosnargh, Preston; 4, Amersham Place, Burnage, Manchester (Dec. 24th); Little Birks Farm, Ballam, Lytham St. Annes; 371, Rochdale Old Road, Fairfield, Bury (Dec. 25th); Sunnyside, Hall Lane, Longton, Preston (Dec. 26th); Huggarts Farm, Brindle, Chorley; Bonds Farm, Chipping, Longridge, Preston; Oakleigh Hall Lane, Longton, Preston; Pebay House, Whittington, Carnforth; Old Hall Farm, Cowhill, Grimsargh, Preston; New Gap Farm, Birch, Heywood (Dec. 30th); Pens at Mosley Estate, Burnley; Norfolk House, Hall Lane, Longton, Preston; Red Gables, Garstang Road, Barton, Preston; Tarbert Villa, Marsh Lane, Longton, Preston; Butts Cottage, Treales, Near Kirkham, Preston (Jan. 1st).

Lincs.—Glengary Poultry Farm, Ruskington Fen, Sleaford (Dec. 23rd); 4, New Council Houses, Helpringham, Sleaford (Dec. 24th); The Lodge, Caddiswell Park, Louth (Dec. 27th); Rosenan, Woodhall Spa; The First, Rectory Road, Ruskington, Sleaford; Church Street, Ruskington, Sleaford; Sand Villa, Lincoln Road, Ruskington, Sleaford (Dec. 29th); Rosedean, Westcliffe Road, Ruskington, Sleaford (Dec. 31st).

London.—45, Earlsfield Road, London, S.W.18 (Dec. 27th).

Middlesex.—Deep Dene, Pedigree Farm, Hampton (Dec. 24th).

Norfolk.—Heathside Café, Swaffham (Dec. 23rd); Thorpe Farm, Shipdham, Thetford (Dec. 27th); Gemmonds, Rockland St. Peter, Attleborough (Dec. 30th); Whews Farm, Caston, Attleborough (Dec. 31st).

Notts.—Holm Farm, Cotgrave, Nottingham (Dec. 30th).

Oxon.—St. Ives, Alvercot Road, Black Bourton (Dec. 24th); The Willows, Black Bourton (Dec. 27th); Rouren Farm, Black Bourton, Oxford; 77, High Street, Kidlington, Oxford (Dec. 30th).

Surrey.—10, Springfield Road, Kingston-upon-Thames; 21, Denmark Road, Kingston-upon-Thames (Dec. 29th).

Sussex.—Woodbine Poultry Farm, Cross-in-hand, Heathfield (Dec. 23rd); Holdings Farm, Kingston, Lewes (Dec. 24th); Milestones, Whitesmith, Chiddingley, Lewes (Dec. 30th); The Rookery, Southover, Lewes; Ovingdean Grange, Ovingdean, Near Brighton (Dec. 31st), Fowl Pens, Richmond Hill, Brighton (Jan. 1st).

Warwicks.—Mounsley Farm, Crab Mill Lane, Hollywood, Birmingham (Dec. 27th).

Yorks.—38, Gleveley Gardens, Mytholmroyd (Dec. 23rd); 38, Nest Estate, Mytholmroyd (Dec. 26th); Drebley, Bolton Abbey, Skipton (Dec. 27th); Rushwood, East Tansfield, Near Ripon; Lower Lumb Farm, Cragg Vale, Mytholmroyd (Dec. 30th).

SWINE FEVER:

Berks.—Piggeries at Betchworth Avenue, Eadley, Reading (Dec. 26th).

Cheshire.—Dairy Farm, Edge, Malpas (Jan. 2nd).

Essex.—Maltings Farm, Little Bentley, Colchester; 23, Coopers Lane, Clacton-on-Sea (Dec. 23rd); Greenstead Hall Farm, Colchester (Dec. 24th); Lake View, Layer-de-la-Haye, Colchester (Dec. 29th), 5, Amho Bungalows, Tolleshunt Knights, Maldon; Lodge Farm, Higham, Colchester; Brewery Farm, Polsteal, Colchester; Wycke Farm, Tolleshunt D'Arcy, Maldon (Dec. 30th); 3a, Cromwell Lane, Maldon (Jan. 2nd).

Flints.—24, Curzon Street, Saltney Ferry, Chester (Dec. 23rd).

Herts.—Piggeries at Kentish Lane, Bell Bar, Hatfield (Dec. 31st).

Lancs.—Benny Lane Farm, Droylsdon, Manchester (Dec. 24th).

Lincs.—Piggeries at rear of 14, Couramore Road, Grimsby (Dec. 24th); Baxters Field, Humberstone Avenue, Humberstone, Grimsby; 216, Heneage Road, Grimsby (Dec. 29th); Manor Farm, Fotherby, Louth (Jan. 2nd).

Norfolk.—Bobby Hill Farm, Wattisfield, Diss (Dec. 31st).

Notts.—Bank House Piggeries, Market Place, Tuxford, Newark (Jan. 2nd).

Salop.—Moss Farm, Myddle, Shrewsbury (Dec. 23rd); The Steppes Farm, Childes Ercall, Market Drayton (Dec. 30th).

Suffolk.—Heath Cottage, Foxhall, Ipswich (Dec. 23rd); Lord Nelson Inn, Ashbocking, Ipswich (Dec. 24th); Old Mill House, Mendelsham Green, Mendelsham, Stowmarket (Dec. 26th); Moss Farm, Worlingworth, Bury St. Edmunds (Dec. 29th); The Hollies, Chilton, Sudbury (Dec. 30th); Green Tiles, Barratts Lane, Needham Market, Ipswich; Icepits Farm, Great Barton, Bury St. Edmunds (Jan. 1st).

Surrey.—Church Farm, Chertsey (Dec. 29th).

Sussex.—The Gables Farm, Rotherfield, Tunbridge Wells (Dec. 29th).

Warwicks.—Hillside Farm, Grange Lane, Four Oaks, Sutton Coldfield, Birmingham (Dec. 23rd); Butlers Road Farm, Long Compton, Shipston-on-Stour; Sharmans Cross Farm, Shirley, Birmingham; Manor Farm, Long Compton, Shipston-on-Stour (Dec. 24th); New Road Allotments, Henley-in-Arden, Birmingham (Dec. 29th); Robin Hood Farm, Tanworth-in-Arden, Birmingham (Dec. 31st).

Worcs.—Ridge Farm, Baccabor Lane, Hollywood, Birmingham (Dec. 24th); Stanley Farm, Ipsley Mill, Redditch (Jan. 2nd).

Yorks.—Meadow Road Allotments, Rotherham (Dec. 29th); Bent Laithes Farm, East Bawtry Road, Rotherham; Sandacres, Doncaster Road, Bawtry, Doncaster (Dec. 30th); South View, Ottringham, Hull; Piggeries at Grange Farm, Wincobank Lane, Sheffield, 9 (Dec. 31st).

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NOTIFIABLE DISEASES NOTES

Fowl Pest.—The number of counties now affected by outbreaks of fowl pest is 44, not all being traceable to the outbreak near Halifax on November 28th. At the time of going to press the number of confirmed outbreaks since that date approaches 300.

Swine Fever.—Outbreaks totalled 891 last year compared with 1,343 in 1951, but the disease appears again to be on the increase in East Anglia.

Anthrax.—Last year there were 1,215 outbreaks of anthrax, more than in any year since 1910, when there were 1,496. The number of outbreaks declined during the war years, and there were as few as 95 in 1946. Since then the numbers have risen slowly each year.

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Tribute to Veterinary Officers of the Eire Department of Agriculture.—Appreciation of the outstanding national service rendered by the veterinary officers of the Department of Agriculture and their inspectors at the ports in so successfully dealing with the problem of keeping the country free from the possibility of foot-and-mouth disease during the outbreaks in Great Britain, was expressed in the report of the Secretary (Mr. T. Healy) to the annual meeting of the United Cattle Traders' Association in Cork.—*Irish Press*

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Erratum.—" The Administration of a Procaine Penicillin Feeding Supplement to 'Runt' Pigs" (*Vet. Rec.* **64.** 647). The authors, Messrs. A. N. Worden and J. Bunyan, apologise for an error in the sub-titles to Figs. 2, 4 and 6 on page 648. The captions should have read ". . . after 27 weeks on experiment " and not ". . . at 27 weeks of age."

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

A CURE FOR INFLATION?

Sir,—Whilst I still remember the trials and joys of being a student, may I make a suggestion regarding one of the banes of my late existence: to wit, those infernal inflationary units by which hormones and antibiotics are measured. Many a night did my head reel as I tried to commit them to memory in all their thousands and millions! Yet how ridiculous remained a mouse unit when applied to the horse.

Let us, as was suggested in the *Lancet* a few weeks ago,* deal with these huge quantities, as do the physicists with their Ohms, Watts, Amperes and Henrys. Let a million units of penicillin be a Fleming (with perhaps 10 Floreys to one Fleming for convenience); insulin be measured in Bantings and Bests, and adrenalin by the Abel, whilst we wait for the day when we can order a whole Hench of cortisons for that rheumatic old cow.

Streptomycin has been rationalised into grammes; now perhaps our profession could take the lead in reorganising these units into more manageable ones, for surely our doses must be the most astronomical. —Yours faithfully, W. J. HERBERT, 14, Queen's Gardens, Hendon, N.W.4. *December 31st*, 1952.

**Reference.—Lancet*: Nov. 8th, 1952, " In England Now."

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CLIPPING: SAFEGUARD OR DANGER IN EXPOSURE?

Sir,—Apropos the paragraph in *The Veterinary Record* of January 3rd, headed " Smithfield (Fog) Echo," and the deserved praise to Mr. Basil Walpole and his staff for the very excellent veterinary work done there, I, for one, would like to read the opinions of some of the older veterinary surgeons regarding the later remarks.

I can well believe that clipping would to some extent alleviate the trouble in these fat cattle—this I know nothing about—but I do know something about the 1914-18 war and horses in the lines in France. It was my luck to serve in the ranks there and my experience was that light draught horses, clipped all over and working hard when required in gun teams, G.S. wagons, etc., but standing for long periods up to the knees and over in mud, just starved or were too poor to work. The rug was never made that would keep a poor clipped-out horse warm in the severe winters we experienced. After all, how could it? It got soaked anyhow and dried (if ever) on the horse. It was difficult to keep it on the horse if the animal lay down and in any case it got very muddy when it did.

No Sir, whatever virtue there may be in chest clipping of cattle, it can receive no support from the advocacy of the total clipping of a horse which may stand for weeks knee deep in mud, clipped all over! The horses which stood up to the conditions for over four years, which stood out all the time and which came back to their owners after the war, were never clipped out, nor did they suffer from respiratory troubles. Obviously there is a middle course—the half ribbing or less—but total clipping, no!

I am quite sure that Captain Frank Gillard, who was our veterinary officer for some of the time, would bear me out in this.

The amount of hair which an unclipped horse would grow was almost unbelievable in length and quantity. Nature served them well and it cannot be surprising that those deprived of it suffered from starvation, for there was no artificial substitute.—Yours faithfully, JAS. K. BATEMAN, " The Hook," Northaw, Potters Bar, Middlesex. *January 5th*, 1953.

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SLAUGHTERING POLICY

Sir,—The leading article under the above heading in your issue of December 27th contains a sentence which has given particular pleasure to this Society, namely: " It must be obvious to anybody with a knowledge of our present system, that anything which makes it possible for animals to be delivered direct from the farm to the abattoir must prove advantageous both to the public and to animal welfare."

The proposal that fat stock should not go to the market is in line with this Society's desire—which I hope will have the support of the British Veterinary Association—that unwanted calves shall similarly be graded and go direct to the slaughterhouse. This is almost happening in practice in many markets but, with a little ingenuity, surely matters could be so arranged that no unwanted bull calves would be sent to market at all.

Markets are still one of the Society's biggest headaches and we are continually receiving complaints concerning them, often from overseas visitors. Some improvement undoubtedly has been made in certain markets during recent years, but much still remains to be done to reform a system which is in many ways a reproach to a nation calling itself humane.—Yours faithfully, ARTHUR W. MOSS, *Chief Secretary, R.S.P.C.A.*, 105, Jermyn Street, London, S.W.1. *January 1st*, 1953.